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PATENT APPLICATION TRANSMITTAL LETTER

Docket Number (Optional)

To the Commissioner of Patents and Trademarks:

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 CFR 1.53(b)(1) is the patent application of Boris Hosseinzadeh-Dolkhani, Wolfgang Schiller, and Marc Rummel

entitled METHOD AND PORTABLE TRAINING DEVICE FOR OPTIMIZING A TRAINING

Enclosed are:

- ☒ 12 pages of written description, claims and abstract.
☒ 2 sheets of drawings.
☐ an assignment of the invention to _____
☒ ~~executed~~ declaration of the inventors.
☐ a certified copy of a _____ application.
☐ associate power of attorney.
☐ a verified statement to establish small entity status under 37 CFR 1.9 and 1.27.
☐ information disclosure statement
☐ preliminary amendment
☐ other: _____

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	NUMBER FILED	NUMBER EXTRA	RATE	FEE
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INDEPENDENT CLAIMS (37 CFR 1.16(b))	3 - 3 =	* 0	x \$ 80	0
MULTIPLE DEPENDENT CLAIM PRESENT	(37 CFR 1.16(d))		\$	
* NUMBER EXTRA MUST BE ZERO OR LARGER			TOTAL	\$ 746
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NOV 14 2000

Date

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METHOD AND PORTABLE TRAINING DEVICE FOR OPTIMIZING A TRAINING

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Field of the invention

The present invention relates to a portable training device comprising a sound playback means, e.g., a music playback device, and a training system and method for optimizing a training.

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Background of the invention

Recently it has come into fashion to practice fitness, e.g. jogging, as leisure activities as compensation to the every-day work but also for building up the personal condition. In order to make these possibly monotone sporting activities more attractive and diversified, special music playback devices have been developed by the entertainment industry, which can be carried on the body during the fitness activity (e.g. jogging), so that simultaneously music can be listened to. Such special music playback devices have become commonly known as Walkman or Discman; appropriate radio devices have been developed, too. However, these music playback devices have the drawback of merely serving for reproducing corresponding media, such as cassettes or compact disks, which for example store music or audio plays. The played pieces of music and texts correspond to the preferences of each sportsman and are in no way associated with the achieved training of the personal condition and fitness.

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Summary of the invention

Thus it is the object of the present invention to provide a portable training device, a training system and a training method which enable a purposeful and controlled and thus optimized training of the user. This object is achieved with the features of the claims.

According to a first aspect, the invention provides a method of optimizing a training comprising the step of:

- a) detecting of parameters inherent to a person's body during a training; said method being characterized by the steps of:
 - b) converting data corresponding to the detected parameters inherent to a person's body into verbal training information for the training person; and
 - c) outputting said verbal training information by a portable sound playback means.

According to a second aspect, the invention provides a portable device for optimizing a training comprising a sound playback means, a microprocessor, and a means for detecting parameters inherent to a training person's body, said detecting means being connected with the microprocessor for data communication, said portable training device being characterized by converter means controlled by the microprocessor and connected to the sound playback means for converting the detected values of said parameters into verbal training information for the training person and for outputting them by the sound playback means.

According to a third aspect, the invention provides a training system comprising a portable device for optimizing a training, said portable device comprising a sound playback means, a microprocessor, a means for detecting parameters inherent to a training person's body, said detecting means being connected with the microprocessor for data communication, and converter means controlled by the microprocessor and connected to the sound playback means for converting the detected values of said parameters into verbal training information for the training person and for outputting them by the sound playback means. The training system further comprises a base station for providing training information, said base station being connectable with said portable device.

To achieve the above object the invention is based on the idea to provide a training program that can be combined or compiled individually and listened to by a user

during the training (e.g., a music compilation), and to provide for a portable training device, besides of the sound playback means for playing the training program in form of music or texts, a possibility to detect the actual training course and to output via the sound playback means verbal training information corresponding to this training course to the user for training purposes.

According to the invention the term "training information" includes all kinds of information which can be used as training information or training instructions, respectively, for optimizing a training, e.g. instructions in a spoken form, preferably assisted by visual signals or information etc. The output of training information in verbal form enhances and optimizes the training as information in verbal form is much more motivating to the user as compared to, e.g., mere displays.

According to the invention the portable training device comprises, besides of the sound playback means, a microprocessor or microcomputer, respectively, and a training course detecting means in data communication with the microprocessor. The training course detecting means detects parameters inherent to the training person during a training. The training course detecting means is, for example, a pulsimeter, a pulseoxymeter, a chronometer, a timer or a pedometer.

The sound playback means is preferably a MP3 player or a device using similar data formats, a Discman, a portable DAT device or a portable MiniDisc device. The sound playback means is preferably insensitive to shock.

A verbal information (for example, "You're pulse frequency is 110") corresponding to the detected pulse is outputted to the user via the sound playback means in order for informing the user about his/her present physical condition. This information is presented to the user on a regular basis, e.g., every minute, or on demand, for example by means of a button or switch provided at the portable training device.

For example, by use of a chronometer or timer the user can perform his training in certain intervals the duration of which is predetermined by the chronometer/timer and verbally signalized to him. The indication of the detected training course, i.e. time intervals, pulse frequency, etc. can be provided by a voice synthesizer and preferably additionally by a visual signal generating means. For example, a light emitting diode is provided that assists and supports the verbal indication or information to the user. Alternatively, a display, e.g. integrated in glasses (e.g., sun glasses) worn by the user is used for visually informing the user about his/her present status.

The microprocessor/microcomputer receives the detected training course signal, i.e. the parameter signal of the detected parameter, and causes that this is converted into corresponding training information and transmits it to a signal means, e.g. a voice synthesizer, for verbally informing the user on the detected parameters. Thus
5 corresponding training information can be communicated to the user on the basis of the determined data (pulse frequency, oxygen content of the blood, time characteristic, distance, etc.). If the user for example listens to music by means of a head set during the training, the running program can be interrupted temporarily for transmitting the training information to inform the user about his/her present physical condition. The
10 portable training device according to the invention thus outputs by means of voice output training information to the user, e.g. information about pulse, elapsed time, pace information (e.g. elapsed distance), information about individual training units, etc.

In a preferred embodiment the user is informed about further training units by means of voice. In this way the user can be prompted based on the previous training
15 course to accelerate or decelerate the speed, to take a break or to change the previous training in any other way. Again, the advantage of the present invention is that the information or instructions, respectively, is given to the user in verbal form (i.e., a virtual personal coach) which is much more motivating to the user than mere signals like beeps.

20 Thus, the training information is combined with the voice of a moderator or coach so that a virtual coaching is realized during the training.

Alternatively the microprocessor/microcomputer influences the sound playback means (e.g. a MP3 player) so that the played music is modified for example by selecting a faster/slower title.

25 A music playback means according to the invention preferably comprises a means for outputting a beat, so that the user is given a predetermined selectable rhythm according to that the user can perform his training. This beat can preferably be provided variably to influence the training course and the training speed, respectively. In a particular preferred embodiment the outputted beat corresponds to the cardiac rhythm
30 of the user so that he can train according to his personal rhythm. The music played by the training device or the music playback means is for example pulse controlled or running controlled.

According to the third aspect of the invention, the training device can be connected with a base station, for example a computer having Internet access, so that

the portable training device can be provided with training programs via the connection with the base station. The individual training programs can be combined or compiled in the Internet in form of music compilations for particular training desires and downloaded. Alternatively a particular training software can first be downloaded from the Internet to the personal computer. In this way special or individual training programs and training courses, respectively, can be processed and combined and then played by a MP3 player. Thus different training desires can be considered, e.g. training duration, training intervals, training intensity (speed, increases), and music direction (jazz, classics, etc.). Alternatively, with the training system according to the invention, already compiled training courses are provided. Preferably, when preparing the individual training program, the user can select a specific voice (e.g., drill sergeant, soft voice etc.) he/she prefers for the verbal information that is communicated to the user during the training. This selection is then transmitted to the portable training device along with the training program.

According to a further preferred embodiment the training device according to the invention comprises a radio transmitting means so that during a training in groups one of the users can act as a trainer or coach and transmit corresponding instructions via radio to the remaining training devices and their users. Likewise the "coach device" can transmit corresponding instructions automatically to the other devices without interconnection of the user/coach.

According to a further preferred embodiment the training device comprises a means for storing personal user data. These are output from the training device during the training and can be received by other training devices. Received personal data of another user can be compared with own personal data (e.g. hobbies) in the own training device. If the compared data match at least partially this is indicated to the user by a corresponding signal.

The training information and training courses, respectively that can be compiled at the base station of the training system and transmitted to the training device are preferably adapted for different kinds of sport, such as jogging, marathon training, cycling, rowing, fitness programs (warm up followed by alternating units of running and gymnastics, etc.), roller blading.

According to the invention, prior to the training, music compilations are provided (in the Internet) at a base station (e.g. computer having Internet access) which then can be combined individually, downloaded and employed for training on a playback device

or a playback device according to the invention (MP3 player). Preferably, the parameters detected during the training are stored in a memory of the portable training device, and are transferred to the base station once the training device is again connected with the base station. In the base station, the detected data of the preceding training unit is analyzed. Based on the outcome of this analysis and based on personal data (e.g., age, gender, etc.) and on the selected kind of sport, a modified training program is offered to the user as a further means to improve and optimize the user's training and physical condition.

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Brief Description of the Drawings

Fig. 1 is a block diagram showing a preferred embodiment of the training method according to the invention; and

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Fig. 2 is a block diagram showing a preferred embodiment of the training system according to the invention.

Description of the preferred Embodiments

According to a preferred method of the present invention as shown in Fig. 1, a user first registers with a personal password at an Internet website. The user then selects a virtual personal coach, i.e., the user selects a specific voice (e.g., drill sergeant) for the training information/instructions communicated during the training. In the next step, the user is asked for personal data such as age, gender, training goal, etc. which allows the training system to assist the user in creating a music compilation or training schedule for specific training units. The selected data are transferred from the PC (base station) to the portable training device, and the user can start the individual training. While the user is listening to the individual music compilation the detected parameters are communicated to the user along with instructions regarding further training units. According to this preferred method, the detected data are stored in a memory of the portable training device and are transferred to the base station after the training is completed. These data are then analyzed at the base station. For example, the data are compared with the data of previous exercises, or with data of other users.

Fig. 2 shows the training system according to a preferred embodiment of the present invention. On top of Fig. 2 the portable training device is shown. According to this specific embodiment, the portable training device comprises a parameter detecting unit that communicates with the microprocessor of the device by wireless transmission.

- 5 Furthermore, a display is provided, e.g. for showing the track number or title of the played music. The training device further comprises an output unit comprising an output sub-unit for music and a sub-unit for the verbal information, a time counter, and a data memory transmitter. The portable training device is adapted for a data transfer with a base station which is in the shown embodiment a computer with an Internet browser for
- 10 accessing an Internet website. At this website, the individual personal data can be entered, the training schedule with a sequence of training units can be created, and the music compilations can be prepared.

Claims

1. Method of optimizing a training comprising the step of:
a) detecting parameters inherent to the body of a user during a training;
3 characterized by the steps of:
b) converting data corresponding to the detected parameters into verbal training information for the user; and
c) outputting said verbal training information to the user by a portable sound playback means.
- 10 2. Method according to claim 1, wherein the verbal training information indicate the detected values of the body's inherent parameters to the user.
- 15 3. Method according to claim 1, wherein the verbal training information include training instructions for the further training based on the detected values.
4. Method according to claim 1, further comprising the steps of:
providing an individual training program on a computer in the form of a music compilation prior to the training; and
20 transmitting the training program to the portable sound playback means.
5. Method according to claim 4, further comprising the step of:
influencing the individual training program provided in the form of a music compilation in the sound playback means dependent on the detected values of
25 the body's inherent parameters.
- 30 6. Method according to claim 1, wherein the verbal training information is outputted simultaneously with the output of the sound playback means or the output of the sound playback means is interrupted during the output of the verbal training information.
7. Portable training device for optimizing a training comprising:
a sound playback means;
a microprocessor; and

a means for detecting parameters inherent to the body of a user, said detecting means being connected with the microprocessor for data communication;

characterized by

5 a converter controlled by the microprocessor and connected to the sound playback means for converting the detected values of said parameters into verbal training information for the user and for outputting them by the sound playback means.

- 10 8. Portable device according to claim 7, wherein the verbal training information indicates the detected values of the body's inherent parameters to the user.
9. Portable device according to claim 7, wherein the verbal training information indicates instructions for the further training to the user based on the detected
15 values of the body's inherent parameters.
10. Portable device according to claim 7, wherein the detecting means comprises at least one of a pulsimeter, a pulsoxymeter, a chronometer, a timer and a pedometer.
- 20 11. Portable device according to claim 7, wherein the converter comprises a voice synthesizer.
12. Portable device according to claim 7, wherein the sound playback means is a
25 MP3 player, a Discman, a DAT device or a MiniDisc device.
13. Portable device according to claim 7, further comprising a means for connecting the portable device with a base station.
- 30 14. Portable device according to claim 13, wherein the base station is a computer preferably having Internet access.

15. Portable device according to claim 13, wherein the sound playback means is adapted to reproduce an individual training program in the form of a music compilation transmitted from the base station.
- 3 16. Portable device according to claim 15, wherein the microprocessor influences the music compilation dependent on the detected values of the body's inherent parameters.
- 10 17. Portable device according to claim 7, wherein the verbal training information is further assisted visually.
18. Portable device according to claim 7, further comprising a means for storing and transmitting personal data of the training person.
- 15 19. Portable device according to claim 7, further comprising a means for receiving personal data of another training person.
- 20 20. Portable device according to claim 19, wherein the microprocessor compares the received personal data with stored own personal data und causes output of a verbal information if the compared data at least partially match.
21. Training system for optimizing a training, characterized by:
 - a sound playback means;
 - a microprocessor;
 - 25 a means for detecting parameters inherent to the body of a user , said detecting means being connected with the microprocessor for data communication;
 - a converter controlled by the microprocessor and connected to the sound playback means for converting the detected values of said parameters into verbal training information for the user and for outputting them by the sound playback means; and
 - 30 a base station.

Abstract**Method and portable Training device for optimizing a training**

5 The present invention provides a portable training device for optimizing a training comprising a sound playback means, a microprocessor, and a means for detecting parameters inherent to the body of the user, said detecting means being connected with the microprocessor for data communication. The training device further comprises a converter means controlled by the microprocessor and connected to the sound playback means for converting the detected values of the said parameters into verbal training information for the training person and outputting them by the sound playback means.

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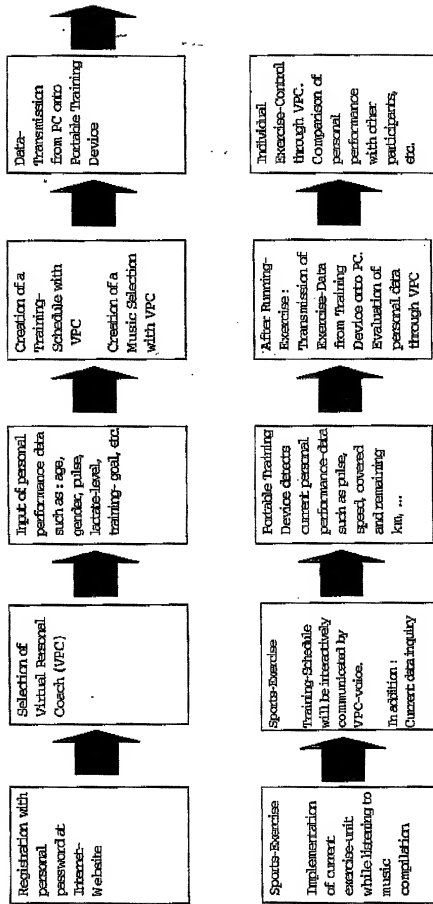


Fig. 1

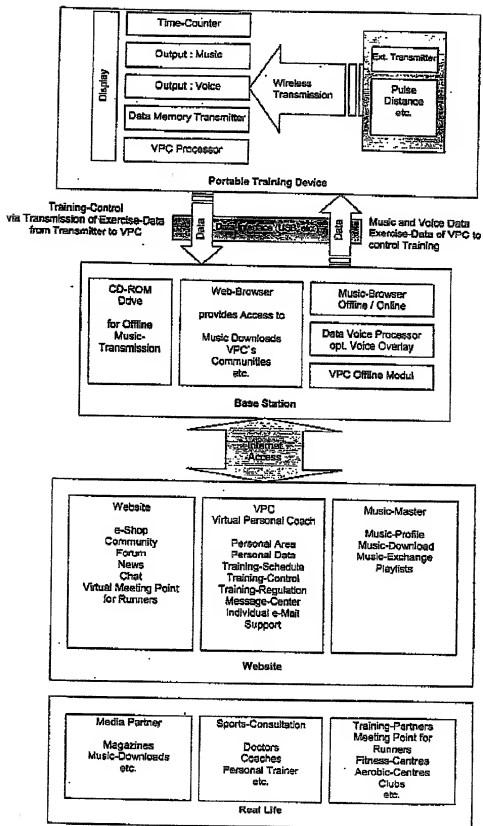


Fig. 2

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am an original, first, and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled METHOD AND PORTABLE TRAINING DEVICE FOR OPTIMIZING A TRAINING, the specification of which is attached hereto unless the following box is checked:

☐ was filed on _____ as _____ Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

199 55 720 9

Federal Republic of Germany

16 November 1999

Priority Not Claimed

☐

☐

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

I hereby appoint the following attorneys and agent to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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☐ Additional inventors are named on separately numbered sheets attached hereto.